

Common Tests and Why We Do Them

Canadian Fontan Education Day

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FONTAN

Disclosures

- None

Outline

- Discuss the body systems affected by Fontan circulation
- Common tests done and what they evaluate
- What to expect

One Size Does NOT fit all!

- 1) Not all people/hearts are the same
 - Need and reason for tests is different for each person

- 2) No one size fits all when caring for people with Fontan
 - Your team may do things differently
 - Differences in approach are not wrong

- 3) If you want to know why you are having a test → Ask!

Systems Affected by Fontan Circulation

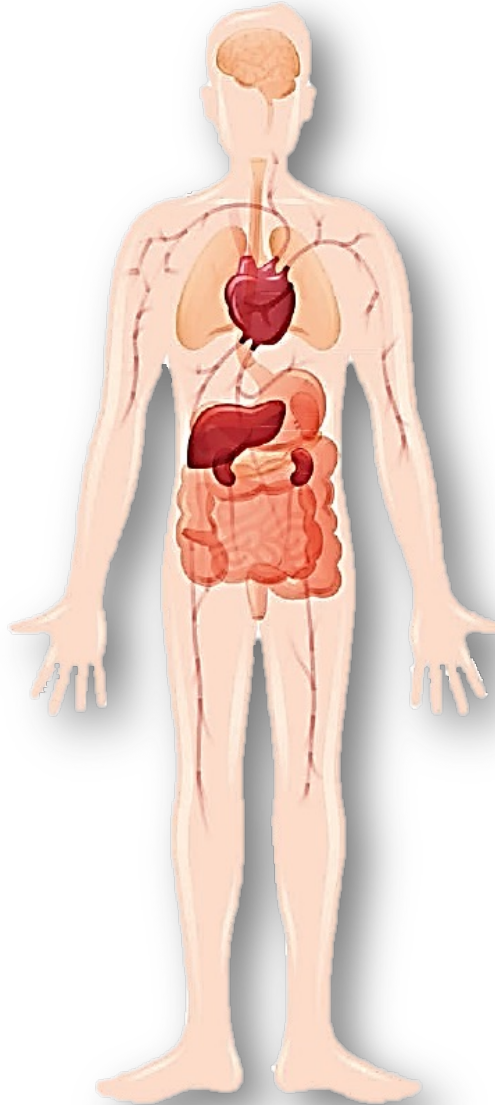
Heart

Lungs

Liver

Immune

Blood



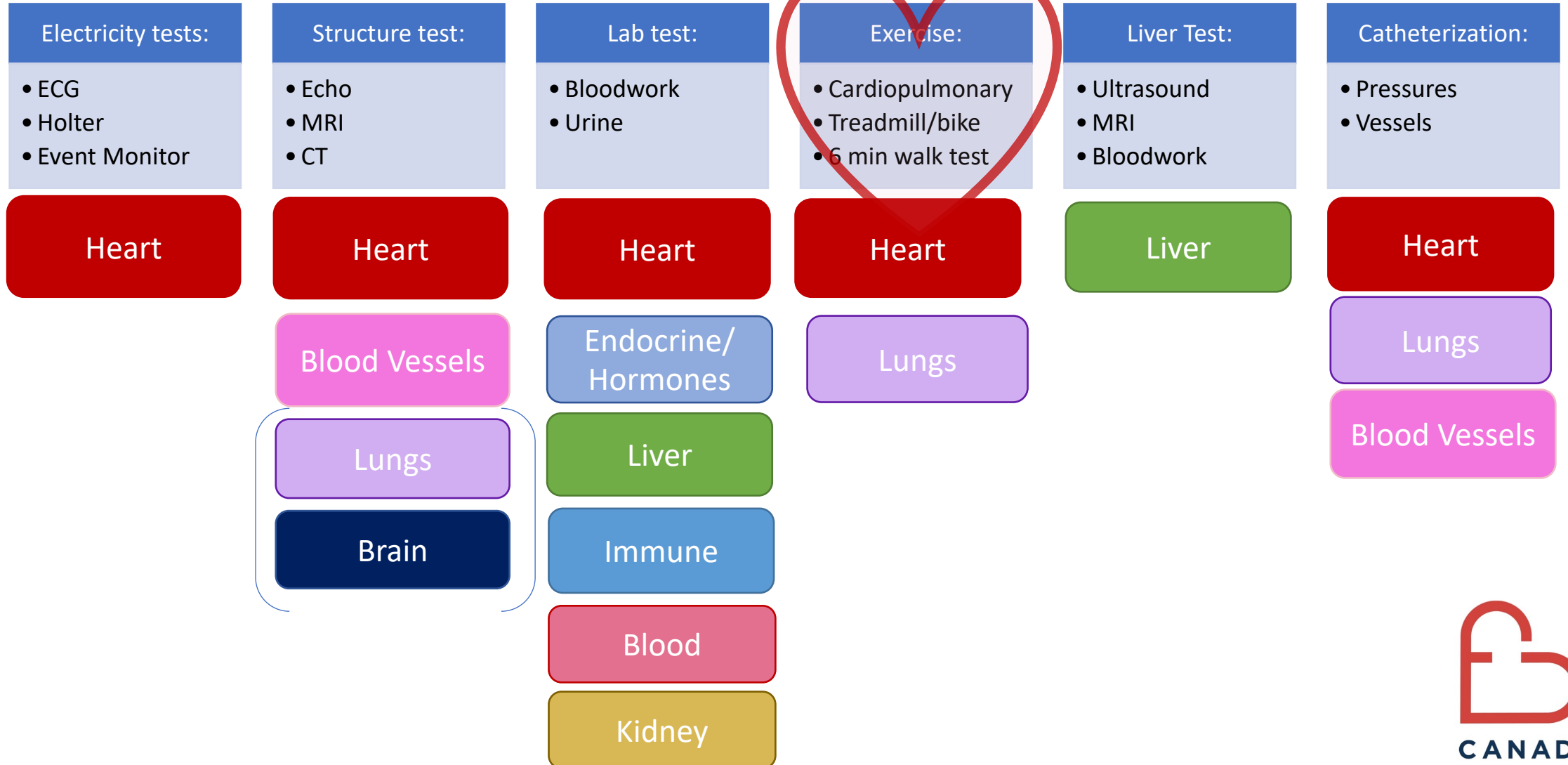
Brain

Endocrine/
Hormones

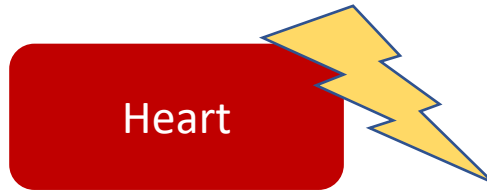
Kidney

Blood Vessels

Common Tests



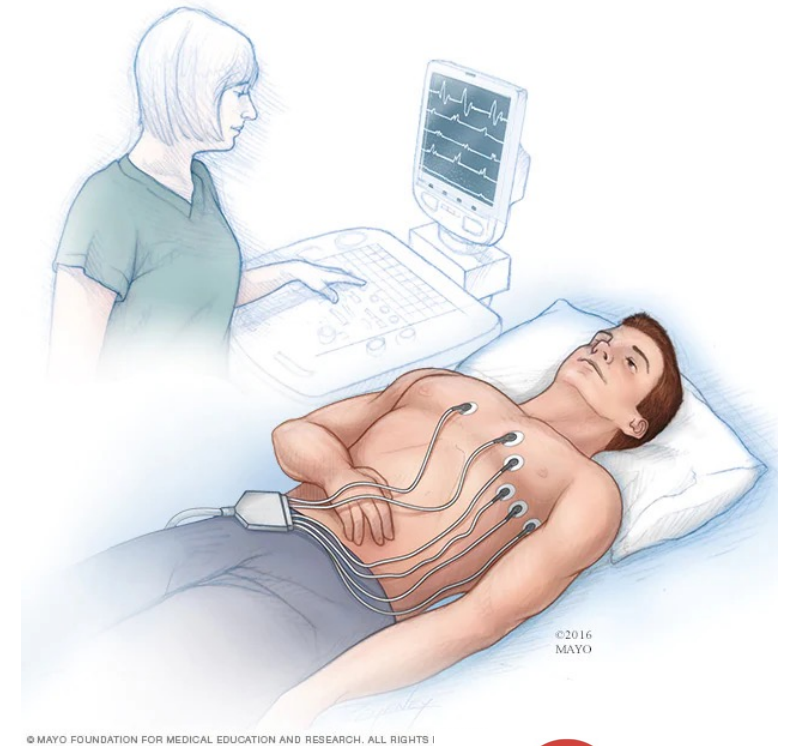
Electricity test



Done Routinely

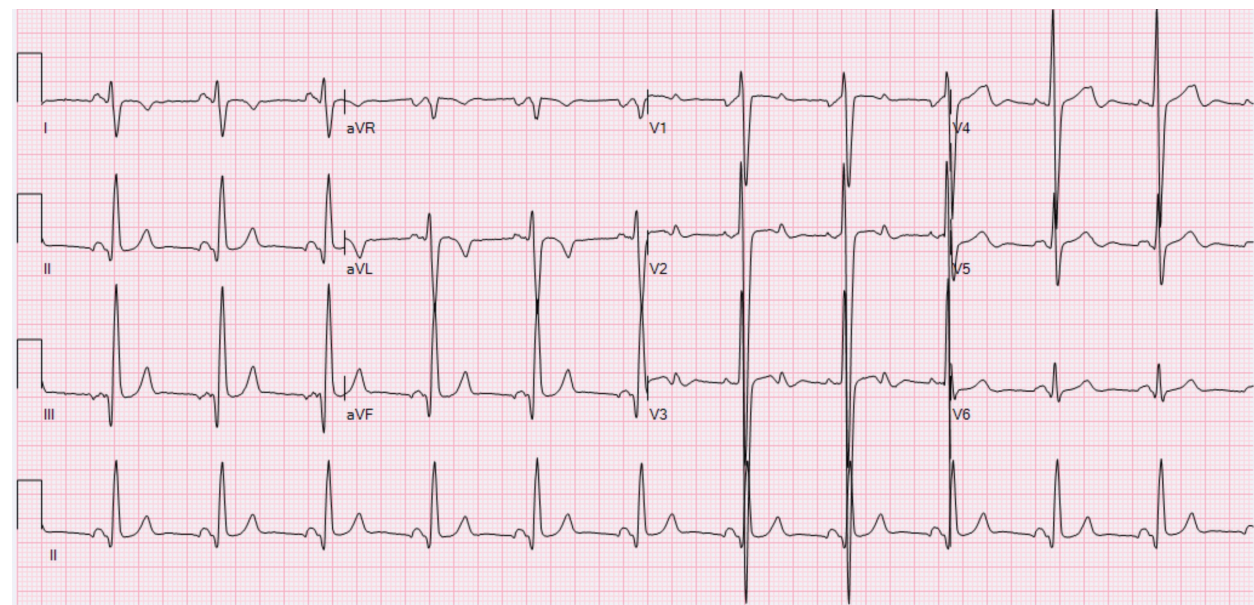
- ECG

- Looks at how electricity moves through the heart (10 s)
- Rhythm – what part of the heart is in control

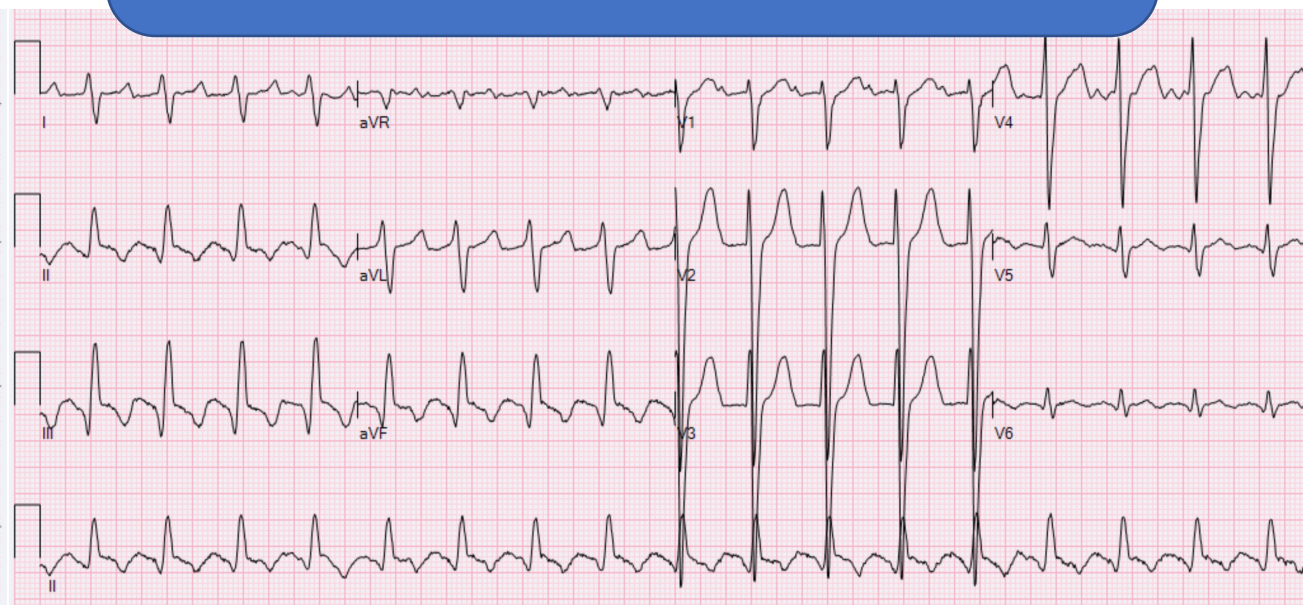


ECG

- Arrhythmia can be tricky to detect because of previous heart surgery
- Compare to previous



Normal Rhythm



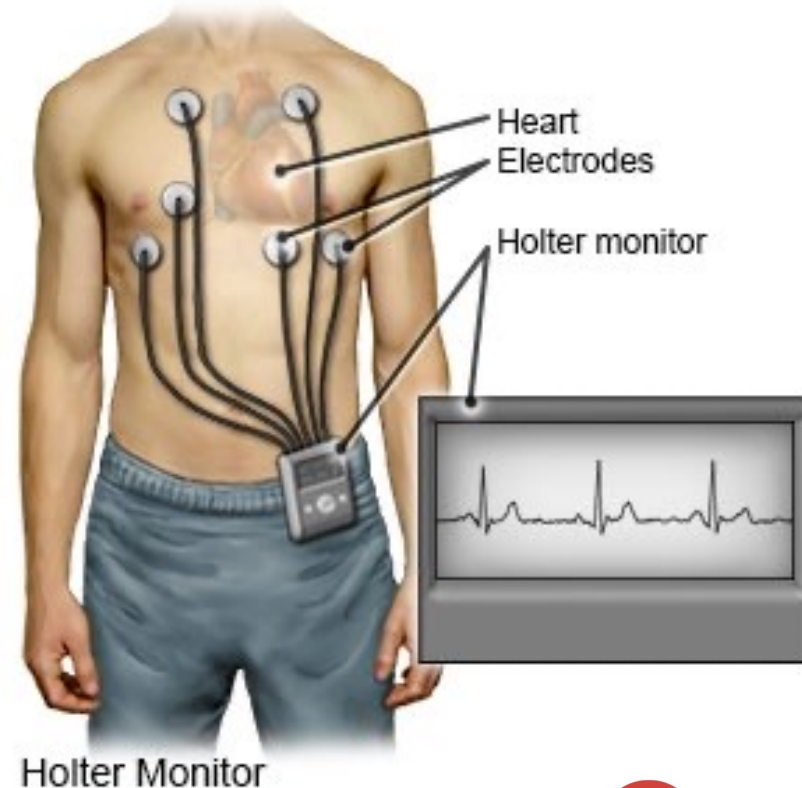
Atrial Flutter

- Heart rhythm problems are a common reason for hospital admission

Holter / Event monitor

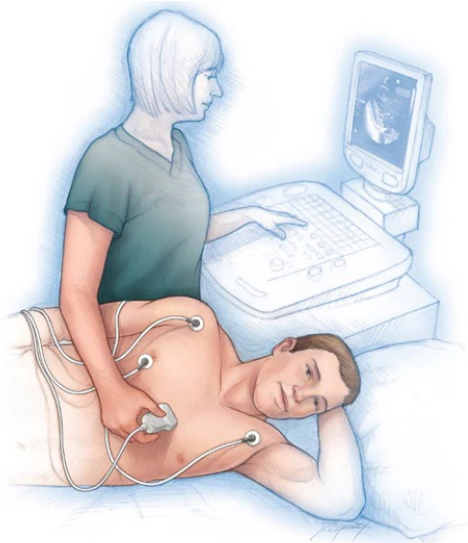
- Holter
 - Monitor heart rhythm over 1-2 days
 - Wearable
- Event Monitor
 - Monitor heart rhythm over 2 weeks
 - Wearable

- Sometimes routine
- When symptoms
- Concern for rhythm



Structure tests

Echocardiogram

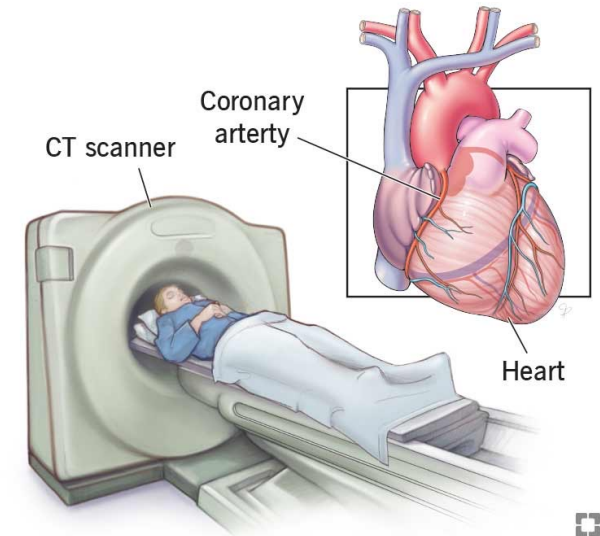


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MRI



CT



Cleveland
Clinic
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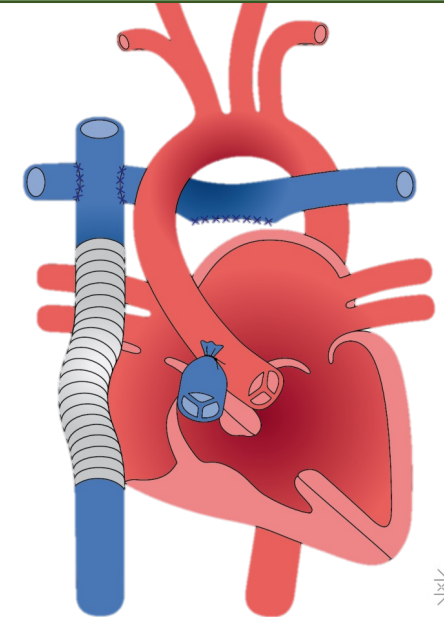
Structure tests



30-60 min

Done Routinely

- Echo
 - Ultrasound test
 - Most common and accessible test
 - Shows size and function of the heart chambers
 - Valve function (narrow or leaky)
 - Holes and leaks (chambers and surgical sites)
 - Great vessels (narrow or dilated)
- Limits:
 - Chest and rib spaces
 - Windows can be limited



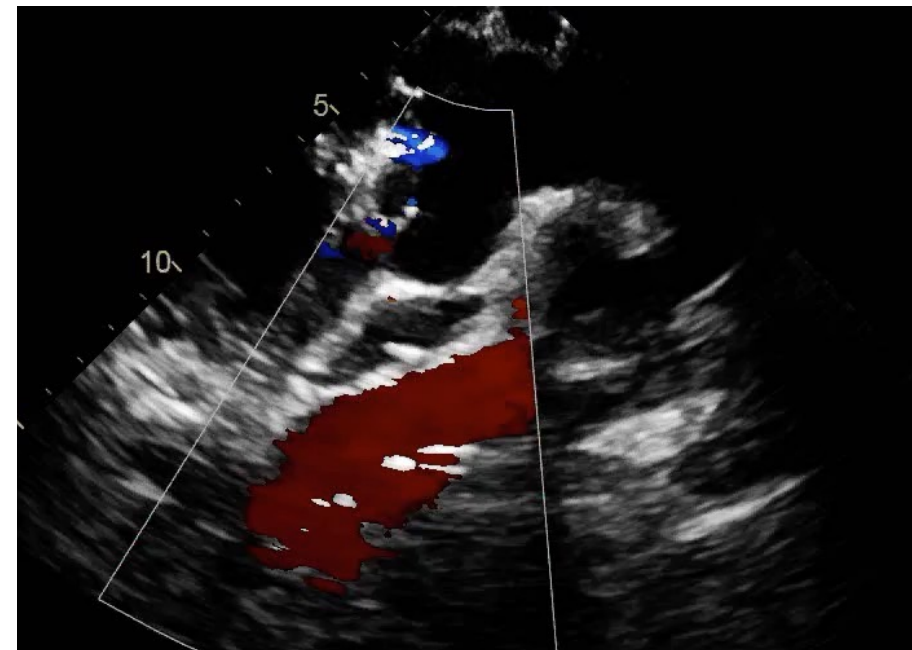
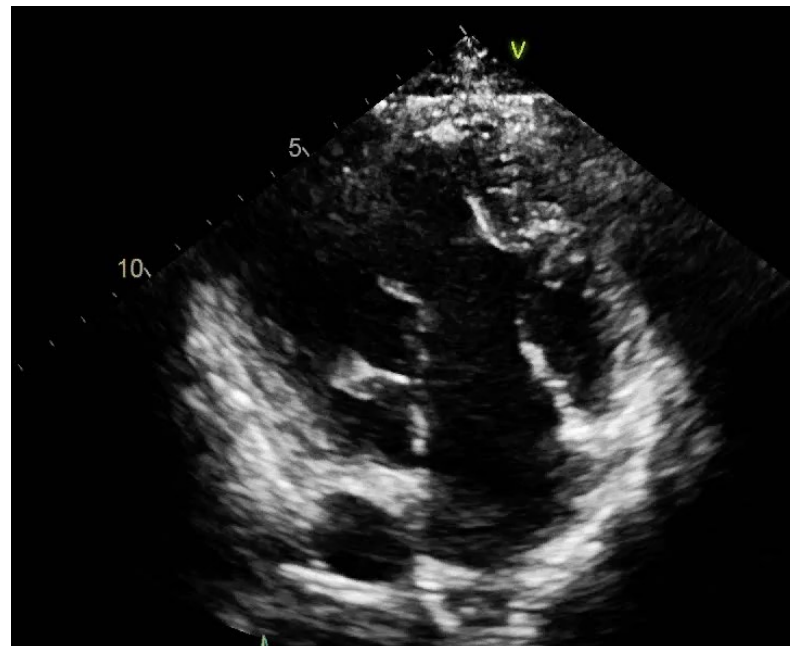
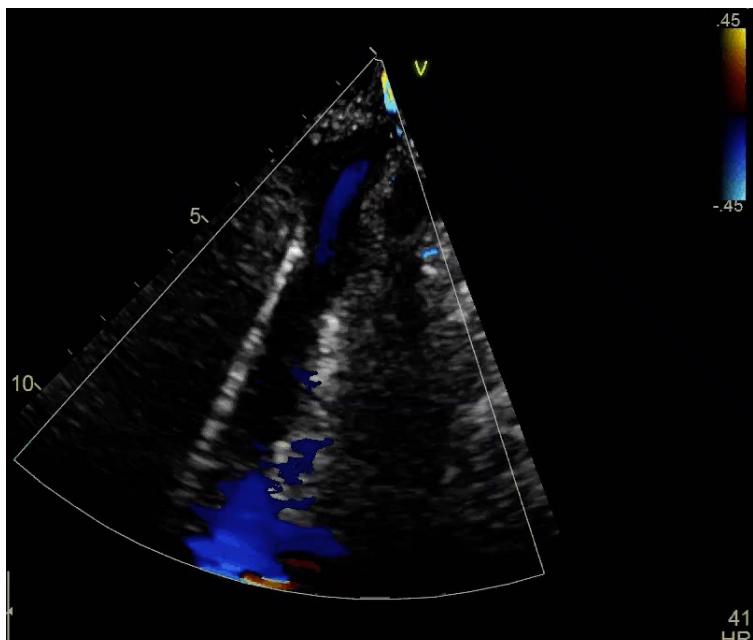
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- Most common imaging test
- Lowest risk
- Available



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Echo



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Structure tests



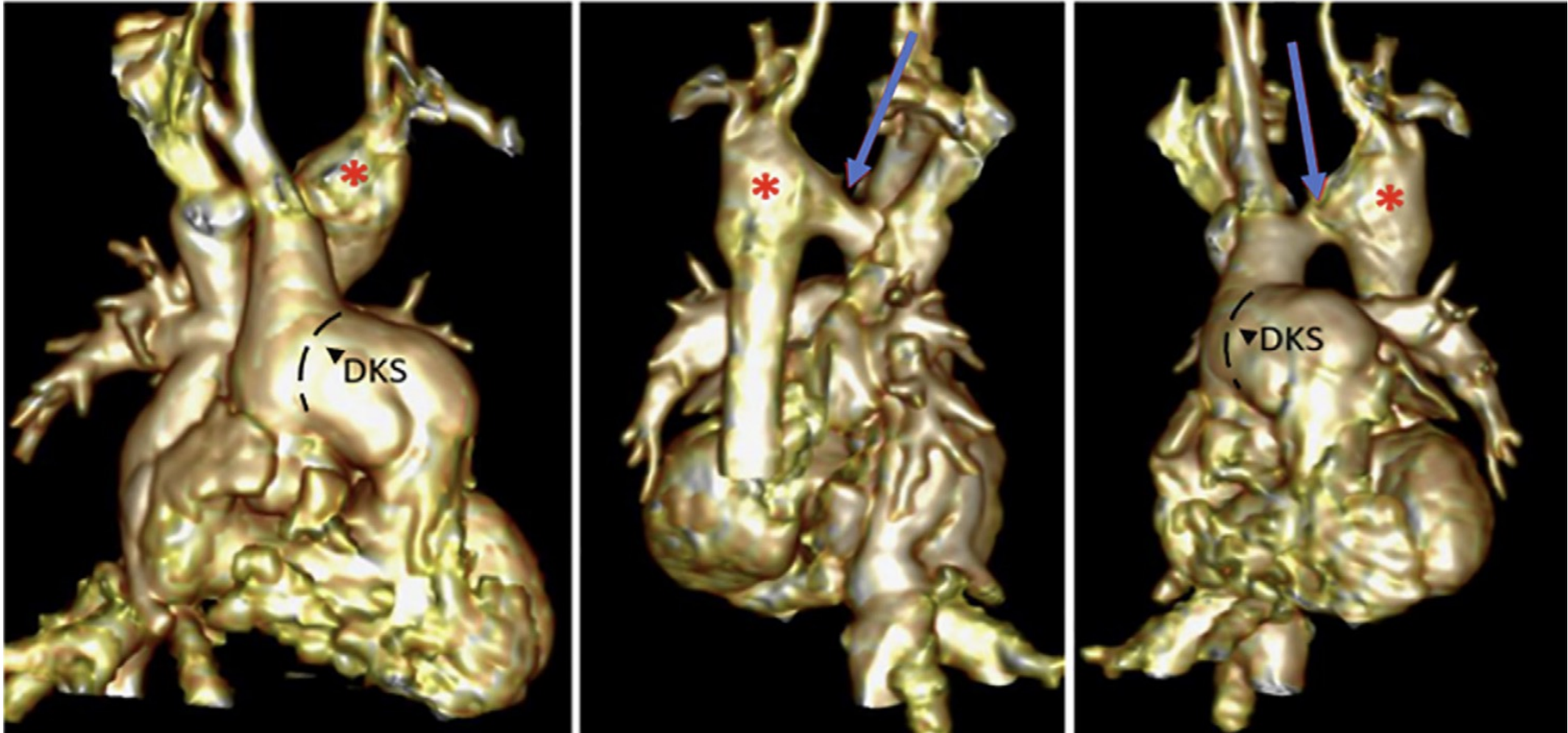
> 60 min

Can be routine
3-5 yrs typically

- MRI
 - Magnetic resonance
 - Best test for heart chamber size
 - Heart muscle and scar
 - Great vessels
- Limits:
 - Pacemakers/devices
 - Artifacts from coils
 - Claustrophobia
 - Availability

- Complementary to Echo

Heart MRI



Structure tests



5-10 min

Can be routine
3-5 yrs typically

- Heart CT
 - X-ray/radiation
 - Great vessels
 - Coronary arteries
 - Done if can't do MRI?
- Limits:
 - Radiation
 - Availability

- Typically done if MRI not possible
- Great for evaluation of blood vessels

Heart CT

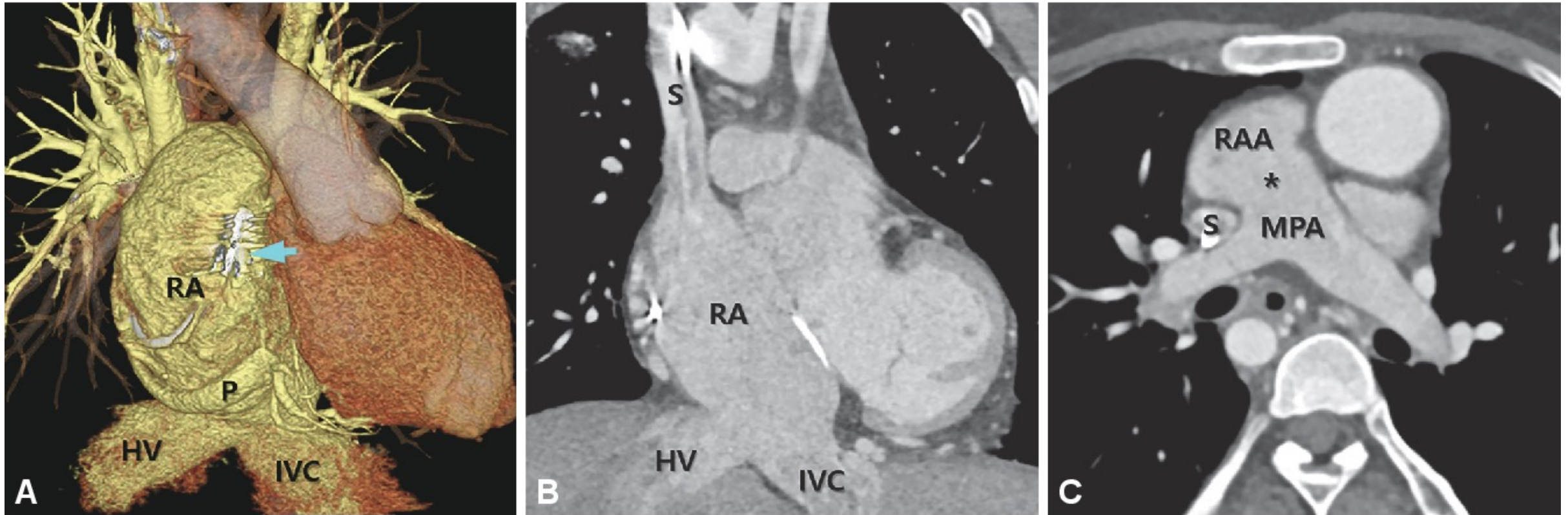
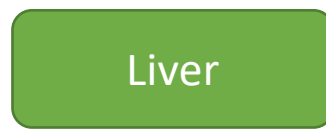
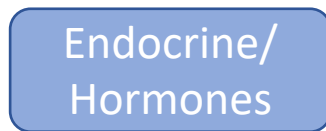
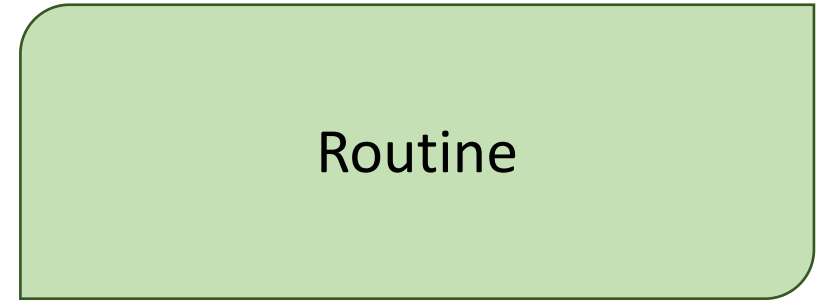


Fig. 3. A 33-year-old female patient who underwent atriopulmonary Fontan operation for tricuspid atresia. Three-dimensional volume ren-

Lab tests

- Bloodwork/Urine

- Way to check many body functions all at once
 - Blood, thyroid, liver function, kidney, heart stress
- Change from baseline



Exercise

Routine, every few years

- CPX/Stress-Echo/Treadmill/6 min walk
 - Different types of exercise tests evaluated different things

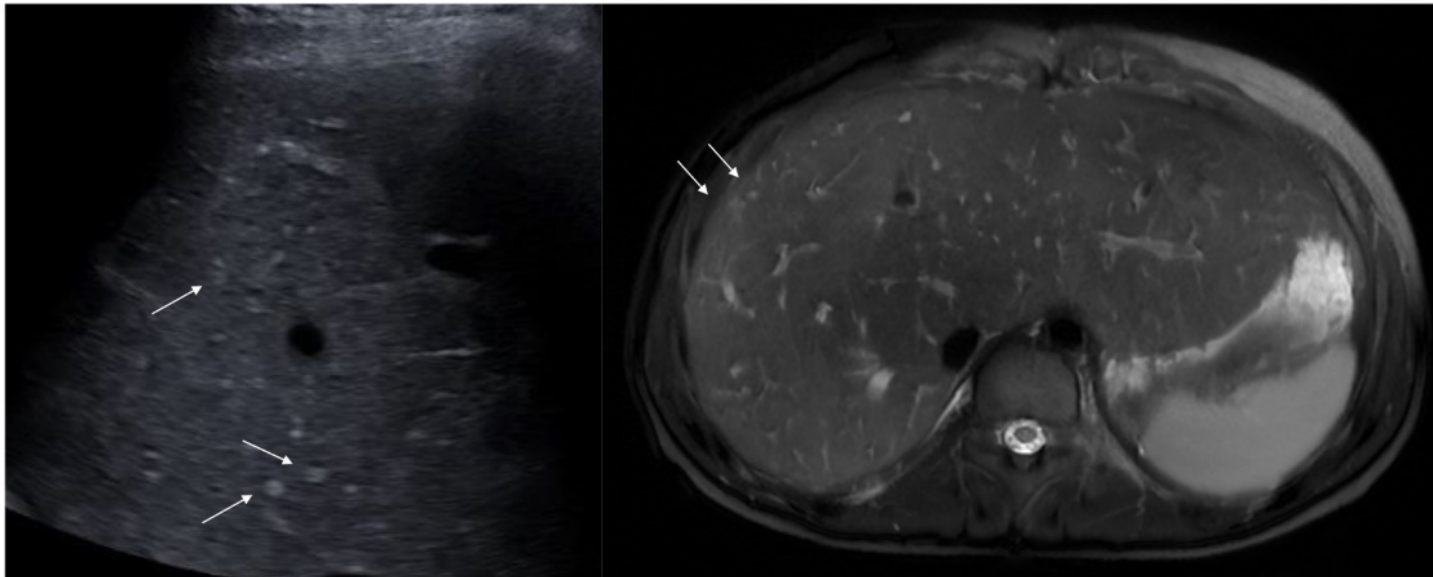


- Typically done if MRI not possible
- Great for evaluation of blood vessels

Liver

Routine

- Liver test
 - Done to evaluate thickening of liver (cirrhosis) and function
 - Check for liver cancer



US Liver

MRI

Catheterization



30-60 min

As needed typically

- Catheter (tube) in blood vessels
 - Pressures in lungs/heart
 - Check for narrowing or leak
 - Look for abnormal blood vessels and shunts
- Limits:
 - X-ray/radiation
 - Invasive (inside the body)



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Catheterization



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Summary

- Multiple body systems affected by Fontan circulation
- Common tests done to check the heart and other systems
- Test done to investigate symptoms and look for changes/problems